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Culture of the mud crab, *Scylla serrata* (Forskal) at different stocking densities in brackishwater ponds

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The mud crab, *Scylla serrata* (Forskal), was grown in monoculture at different stocking densities: 5,000, 10,000, 15,000 and 20,000 individuals/ha for 90 days.

The mean weight percentage survival, relative growth increment, net production and feed conversion value of mudcrab stocked in monoculture at four stocking densities are presented in Table 1. Mudcrab reared at 5,000 individuals/ha (Treatment I) had the highest average weight of 231.60 g ($P > 0.05$) compared to all other treatments. Percentage survival was likewise statistically higher in Treatment I. Highest percentage survival was 88.00% (5,000 individuals/ha). The relative growth increment apparently followed the same downward trend for all treatments and were 2.28, 1.89, 1.61 and 1.69 g/day/crab for 5,000, 10,000, 15,000 and 20,000 individuals/ha, respectively.

The data obtained agrees well with the report of Lijauco et al. (1980) on density studies of the mud crab (5,000 and 10,000 individuals/ha) stocked with milkfish at 2,500 fingerlings/ha.

Increases in carapace width and length measured from the base of the abdomen to the tip of the frontal spine and then from the tip of the opposite lateral spines, respectively, done at stocking to final harvest are shown in Table 2. At harvest, mud crab grown at 5,000 individuals/ha averaged a relatively higher carapace length of 73.30 mm and carapace width of 106.30 mm compared to all other treatments. The relative carapace length and width increment of 0.429 and 0.611 mm/day/crab was also obtained from same stocking density, respectively.

Table 1. Stock and harvest data of mud crab, *Scylla serrata* (Forskal) in monoculture at four (4) stocking densities in 100 m^2 ponds.

Treatment	Density stock $100/m^2$	Harvest/100 m^2		Percentage survival	Relative growth increment g/day/crab	Feed conversion value	Net production (kg/ha/crop)
		No. recovered	Average wt. (g)				
I	50	44	231.60^a	88.00^a	2.28^a	1.72^a	907.89^b
II	100	52	196.63^b	52.00^b	1.89^b	2.16^b	891.12^c
III	150	57	171.11^d	38.00^c	1.61^d	3.85^d	831.34^d
IV	200	62	178.11^c	31.00^d	1.69^c	4.04^c	947.67^d

Treatment means with the same superscript are not significantly different ($P > 0.05$).

Table 2. Body size increment of mud crab reared in monoculture at four (4) stocking densities for 90 days.

Treatment No.	Individuals per ha.	Mean carapace length (mm)		Relative carapace length increment (mm/day/crab)	Mean carapace width (mm)		Relative carapace width increment (mm/day/crab)
		Initial	Final		Initial	Final	
I	5,000	34.67	73.30	0.429	51.50	106.50	0.611
II	10,000	34.67	72.50	0.420	51.50	102.00	0.561
III	15,000	34.67	68.71	0.378	51.50	93.69	0.468
IV	20,000	34.67	72.10	0.415	51.50	96.38	0.498

Marketable size crabs with average weight of 235.00 g and carapace length and width of 71.00 mm and 103.00 mm, respectively, were obtained during the 60 day sampling period. Sexual maturity of the crab was observed as some males were seen cradling or carrying the females underneath. Berried crabs were also included in the sample. During water management, varied sizes of mud crabs were further observed swimming against the current or clinging along the bamboo fence. This report is similar to those revealed by Lijauco, et al. (1980). According to Arriola (1940) it would take about 5 months for the mud crab to attain sexual maturity after undergoing 12 to 15 molts. The same author mentioned further that from initial carapace width of 49 to 85 mm, the crabs mature upon reaching carapace width of 114.2 to 109.5 mm for the female and 99.7 mm for the male.

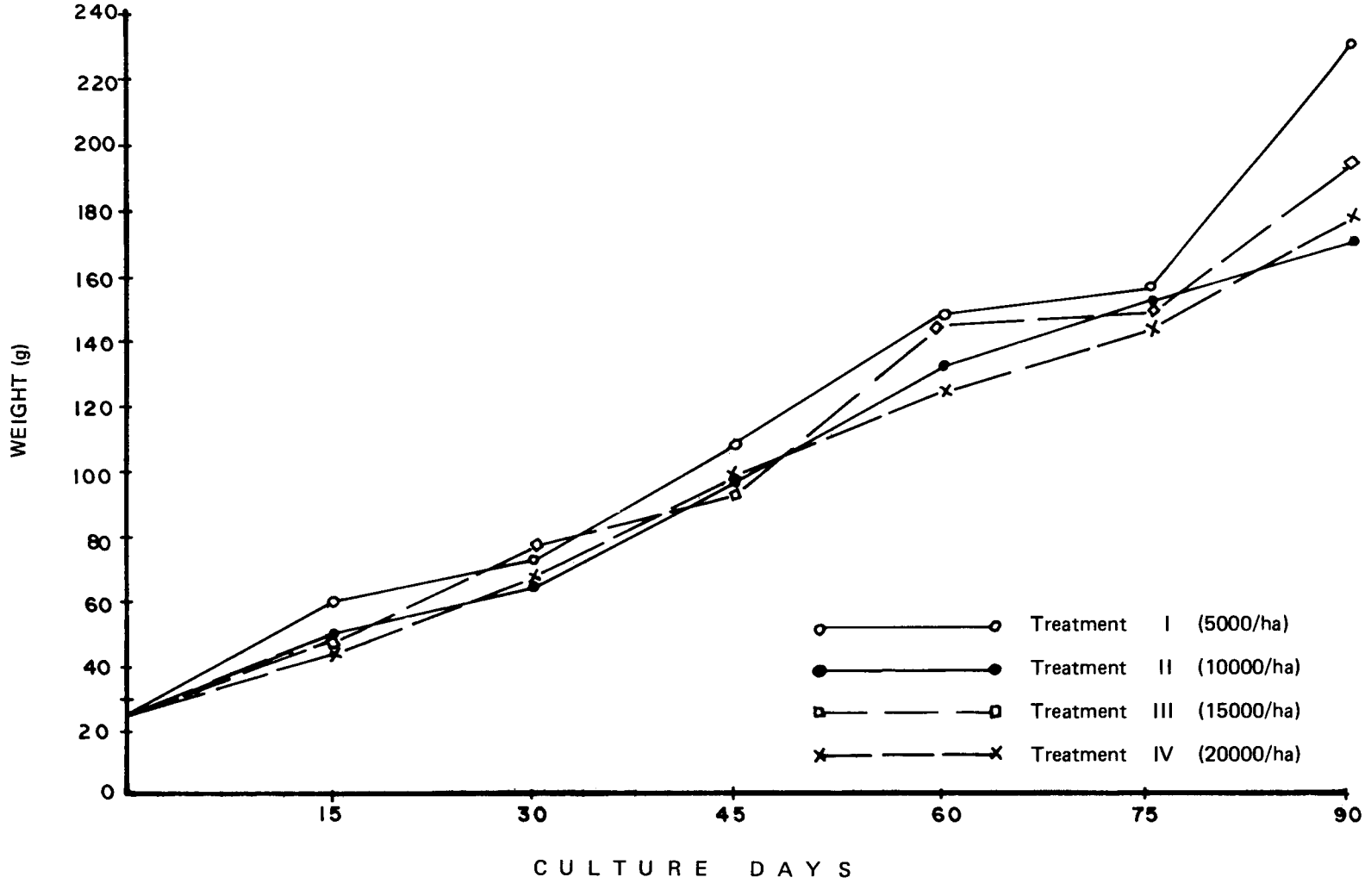

Fig. 1. Growth curves of mud crab (*S. serrata,* Forskal) grown at four (4) stocking densities for 90 days in brackishwater ponds.

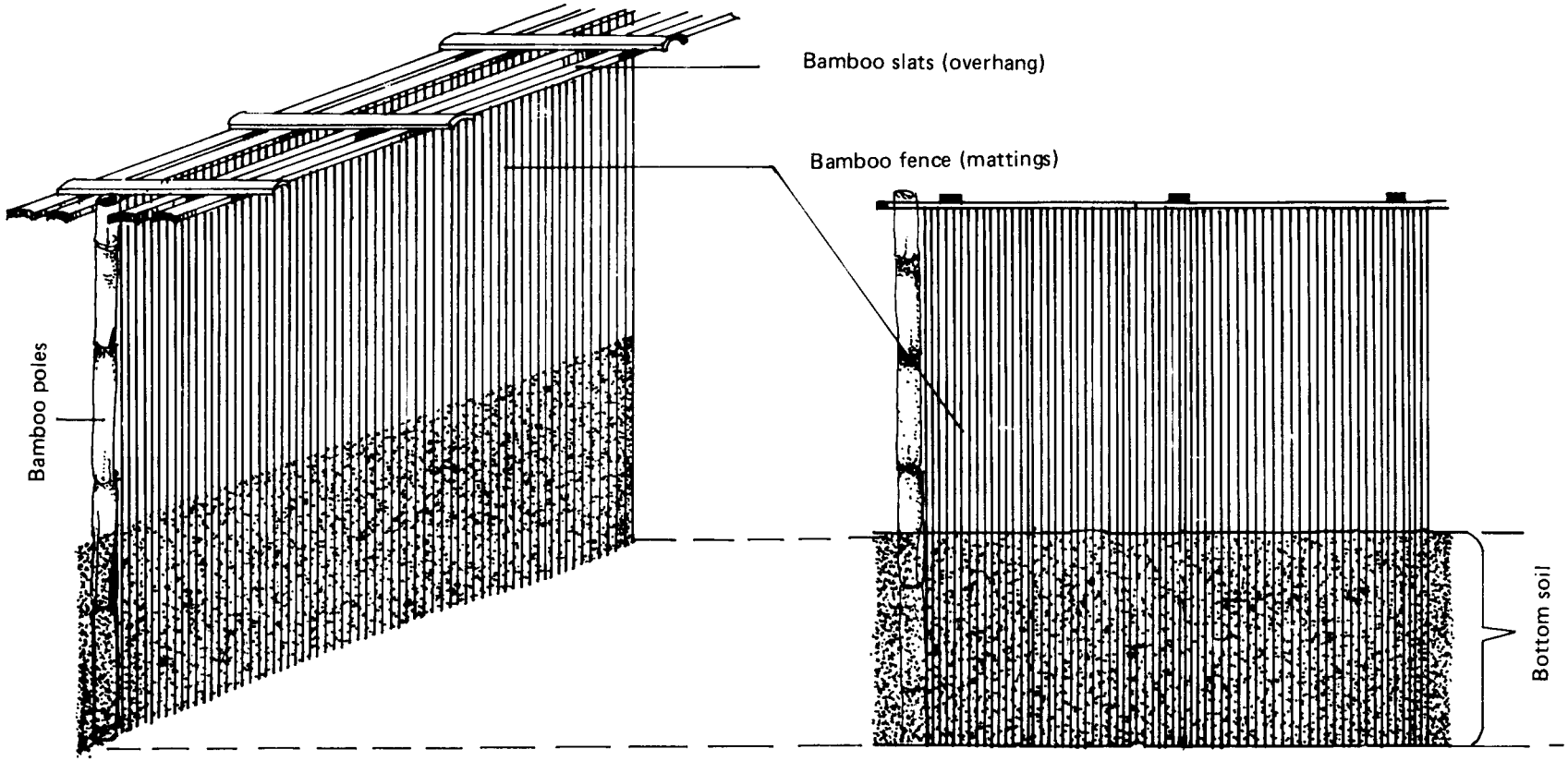

Fig. 2. Set-up of bamboo fence used in the culture of mud crab, *S. serrata* (Forskal) at four (4) stocking densities in brackishwater ponds.

Net production appeared to be higher at 20,000 individual/ha (947.67 kg/ha/crop) but with a high feed conversion value (4.04) the amount of feed needed will also be more (Table 1). Best feed conversion value of 1.72 was obtained from the lowest stocking density (5,000 individuals/ha) treatment with corresponding net production of 907.80 kg/ha/crop. There was a significant difference ($P < 0.05$) for net production and feed conversion values achieved from various treatments. The relatively low feed conversion value obtained among treatments is presumably associated with the feeding regime done every other day, at least differentiated quantitatively with daily feeding.

The mean weights of samples taken from various culture days are plotted to show the growth curves (Fig. 1). Apparently, the growth curve drawn declines with increasing density levels. Marked difference in growth increment in favor of the low stocking density was observed after day-30 which further continued until harvest.

Water quality parameters observed during a 90-day culture period indicated that salinity levels did not vary widely over the course of the experiment among treatments; values ranged from 13 to 32 ppt. Water pH was nearly alkaline and essentially the same throughout the experiment ranging from 6.00 to 8.45. Dissolved oxygen levels are sufficient and similar in all compartments ranging from 25.0 to 34.^{o}C. The fairly uniform and favorable conditions could be attributed to the bamboo slats made to fence the compartment which allow equal distribution of water within the pond. (Fig. 2).

Literature cited:

Lijauco, M., O. Prospero and E.M. Rodriguez, 1980. Polyculture of milkfish, *Chanos chanos* and mudcrab, *Scylla serrata* at two stocking densities. SEAFDEC Aquaculture Department, Quarterly Research Report Vol. 4, No. 4.

Arriola, F.J. 1956. A preliminary study of the life history of *Scylla serrata,* Philippine Journal of Science, 72 (4), 437-456 pp.